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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:	)	Before the Board
	)	of Appeals
John A. Reeve	)	
	)	
Serial Number: 10/640,367	)	
	)	
Filed: August 13, 2003	)	
	)	
Title: SILICON-CONTAINING	)	
TREATMENTS FOR	)	
SOLID SUBSTRATES	)	
	)	
Attorney Docket: MSH – 245	)	October 2, 2005

Commissioner for Patents  
P. O. Box 1450  
Alexandria VA 22313-1450

Dear Sir:

Please find enclosed a brief in support of the Notice of Appeal that was filed on August 11, 2005. The Commissioner is hereby authorized to charge a brief fee of \$250.00 under Fee Code 2402 (37 CFR 41.20(b)(2)) to Deposit Charge Account 13-2492.

Appellant is a small entity.

Respectfully submitted,

*Robert L. McKellar*

Robert L. McKellar  
Reg. No. 26,002  
(989) 631-4551

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### **BRIEF ON APPEAL**

This is an appeal from the office action mailed on May 16, 2005, rejecting claims 1 to 6 and 9 to 54. A Notice of Appeal was timely filed on August 11, 2005, with the accompanying fee.

Authorization to charge Deposit Charge Account 13-2492 for the Appeal Brief fee of \$250.00 has been granted in the cover letter hereto. Appellant is a small entity, the verification therefor being filed with the original application.

#### **(C )(1)(i) REAL PARTY IN INTEREST**

Aegis Environmental, 2205 Ridgewood Drive, Midland, Michigan 48642 is the real party in interest, having an assignment from the inventor John A. Reeve recorded at Reel/Frame: 015679/0943 on August 12, 2004.

#### **(C )(1)(ii) RELATED APPEALS AND INTERFERENCES**

To the best of Appellant's knowledge, there are no appeals or interferences related to the present one which are likely to directly affect or be directly affected by the Board's decision in the pending appeal.

#### **(C )(1)(iii) STATUS OF THE CLAIMS**

Claims 1 to 6 and 9 to 54 are in the application and all are being appealed. Claims 7 and 8 have been previously cancelled.

#### **(C )(1)(iv) STATUS OF AMENDMENTS**

The Examiner has entered all of the amendments and they are reflected in the claims attached in the claims appendix.

#### **(C )(1)(v) SUMMARY OF CLAIMED SUBJECT MATTER**

This invention is a method of treating a solid substrate wherein the method comprises providing a solid substrate and spraying the solid substrate with an aqueous solution of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of reactive silanes, reactive siloxanes, hydrolysis products of the above-mentioned materials, and combinations of these materials. Essentially, immediately after this first application, in a second step, the solid substrate from the first step is sprayed with a silicon-containing material capable of reacting at or near the solid substrate surface wherein such a material is selected from the group consisting of materials containing multi-silanol groups, siliconates, silicates, and combinations of any of the materials containing multi-silanol groups, siliconates, and silicates

**(C)(1)(vi) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Rejection of claims 1 to 3, 10 to 34, 36 to 38, 40, 41, 43 to 45, 47, 48, 50 to 52 and 54 as being unpatentable over U.S. Patent Publication 2002/0048679 by Lohmer, et al., in view of U.S. Patent 4,632,848.

**(C)(1)(vii) ARGUMENTS**

Rejection of claims 1 to 3, 10 to 34, 36 to 38, 40, 41, 43 to 45, 47, 48, 50 to 52, and 54 under 35 USC §103(a) as being unpatentable over U.S. Patent Publication 2002/0048679 by Lohmer, et al in view of U.S. Patent 4,632,848

Appellant disagrees with the Examiner's combination of these references in the manner that he has, and further, the Examiner has drawn the wrong conclusions from the teachings in those references.

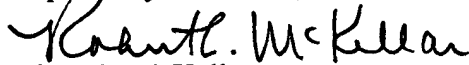
The Examiner has noted that Lohmer teaches a method for treating a solid substrate comprising reacting the substrate with a reactive silane and then reacting the treated surface with a hydrophobic compound that ensures water-repellency. Applicant notes that the hydrophobic compounds are set forth by Lohmer at paragraph [0054] of the specification, and it is further noted that none of them deal with siliconates, silicates, or materials containing multi-silanol groups.

Because of the nature of this teaching, the Examiner combines Gosset, et al with Lohmer, et al and states that this combination teaches the forming of a protective coating on a surface, using a hydrophobic compound, potassium silicate, to improve the resistance to water.

Applicant notes for the Examiner that Gosset, et al teaches the combination of the potassium silicate with the entire coating material of Gosset, et al. Since Gosset, et teaches the use and preparation of a system for a protective coating, why would one skilled in the art, having the Lohmer, et al patent in hand, be directed to segregate the potassium silicate of Gosset, et al and apply it as a second coating to the treated substrate? One would not of course. These two references have been impermissibly combined and the wrong conclusions have been drawn as a consequence of such a combination.

Based on the above remarks the Appellant believes that the claims are allowable over the cited art and the Appellant requests that the Board reverse the Examiner in all of the rejections.

Respectfully submitted,



Robert L. McKellar

Reg. No. 26,002

(989) 631-4551

**(C)(1)(viii) CLAIMS APPENDIX**

1. A method of treating a solid substrate, the method comprising:

(I) providing a solid substrate;

(II) spraying the solid substrate with an aqueous solution of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, (ii) reactive siloxanes, (iii) hydrolysis products of (i), (iv) hydrolysis products of (ii), and (v), combinations of any of (i), (ii), (iii), and (iv), and essentially, immediately thereafter,

(III) spraying the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface selected from the group consisting of:

- a. materials containing multi-silanol groups,
- b. siliconates,
- c. silicates, and,
- d. any combinations of a., b., and c.

2. A method of treating a solid substrate, the method comprising:

(I) providing a solid substrate;

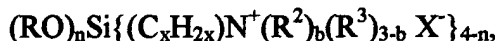
(II) immersing the solid substrate in an aqueous solution of a at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, (ii) reactive siloxanes, (iii) hydrolysis products of (i), (iv) hydrolysis products of (ii), and (v), combinations of any of (i), (ii), (iii), and (iv), and essentially, immediately thereafter,

(III) dipping the solid substrate from (II) in a silicon-containing material capable of reacting at or near the solid substrate surface selected from the group consisting of:

- a. materials containing multi-silanol groups,
- e. siliconates,
- f. silicates, and,
- g. any combinations of a., b., and c.

3. A method of treating a solid substrate, the method comprising:
  - (I) providing a solid substrate;
  - (II) spraying the solid substrate with an aqueous solution of at least one material capable of reacting at or near the solid substrate surface selected from a group consisting of (i) reactive silanes, (ii) reactive siloxanes, (iii) hydrolysis products of (i), (iv) hydrolysis products of (ii), and (v), combinations of any of (i), (ii), (iii), and (iv), while essentially simultaneously
  - (III) spraying the solid substrate from (II) with a silicon-containing material capable of reacting at or near the solid substrate surface selected from the group consisting of :
    - a. materials containing multi-silanol groups,
    - b. siliconates,
    - c. silicates, and,
    - d. any combinations of a., b., and c.
4. A method as claimed in claim 1 wherein the aqueous solution in (II) also contains a material having a dianion.
5. A method as claimed in claim 2 wherein the aqueous solution in (II) also contains a material having a dianion.
6. A method as claimed in claim 3 wherein the aqueous solution in (II) also contains a material having a dianion.
9. A method as claimed in claim 3 wherein there is in addition, a catalyst present for the reaction of (III).
10. The method as claimed in claim 1 wherein the material in (II) is a silane.
11. The method as claimed in claim 10 wherein the silane is an organofunctional silane.
12. The method as claimed in claim 2 wherein the material in (II) is a silane.
13. The method as claimed in claim 12 wherein the silane is an organofunctional silane.
14. The method as claimed in claim 3 wherein the material in (II) is a silane.
15. The method as claimed in claim 14 wherein the silane is an organofunctional silane.
16. The method as claimed in claim 1 wherein the material in (II) is an alkoxy functional silane.
17. The method as claimed in claim 16 wherein the silane is an aminoorganofunctional silane.

18. The method as claimed in claim 17 wherein the aminoorganofunctional silane has the general formula:



wherein  $n$  has a value of 1, 2, or 3;  $x$  has a value of 1 to 20;  $R$  is an alkyl group having 1 to 6 carbon atoms; each  $R^2$  is hydrogen or an alkyl group selected from the group consisting of 1 to 6 carbon atoms,  $X$  is a halogen, each  $R^3$  is hydrogen or an alkyl group selected from the group consisting of 1 to twenty carbon atoms and  $b$  has a value of 0, 1, 2, or 3.

19. The method as claimed in claim 18 wherein  $R$  is a methyl radical,  $n$  has a value of 3,  $x$  has a value of 3, each  $R^2$  is a methyl group.

20. The method as claimed in claim 1 wherein the solid substrate is selected from the group consisting of:

- |                       |                          |                         |                  |
|-----------------------|--------------------------|-------------------------|------------------|
| a. cotton,            | b. polyester,            | c. nylon,               | d. rayon,        |
| e. rubber,            | f. fibers,               | g. acrylic,             | h. foams,        |
| i. polypropylene,     | j. polyethylene,         | k. mineral,             | l. polyurethane, |
| m. paper,             | n. glass,                | o. silica,              | p. wood,         |
| q. concrete,          | r. other solid polymers, | s. other hard surfaces, |                  |
| t. building products. |                          |                         |                  |

21. The method as claimed in claim 16 wherein the alkoxysilane is trimethoxysilane.

22. The method as claimed in claim 2 wherein the material in (II) is an alkoxy functional silane.

23. The method as claimed in claim 22 wherein the silane is an aminoorganofunctional silane.

24. The method as claimed in claim 23 wherein the aminoorganofunctional silane has the general formula:



wherein  $n$  has a value of 1, 2, or 3;  $x$  has a value of 1 to 20;  $R$  is an alkyl group having 1 to 6 carbon atoms; each  $R^2$  is hydrogen or an alkyl group selected from the group consisting of 1 to 6 carbon atoms,  $X$  is a halogen, each  $R^3$  is hydrogen or an alkyl group selected from the group consisting of 1 to twenty carbon atoms and  $b$  has a value of 0, 1, 2, or 3.

25. The method as claimed in claim 24 wherein R is a methyl radical,  $n$  has a value of 3,  $x$  has a value of 3, each  $R^2$  is a methyl group.

26. The method as claimed in claim 2 wherein the solid substrate is selected from the group consisting of:

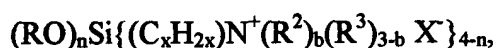
- |                       |                          |                         |                  |
|-----------------------|--------------------------|-------------------------|------------------|
| a. cotton,            | b. polyester,            | c. nylon,               | d. rayon,        |
| e. rubber,            | f. fibers,               | g. acrylic,             | h. foams,        |
| i. polypropylene,     | j. polyethylene,         | k. mineral,             | l. polyurethane, |
| m. paper,             | n. glass,                | o. silica,              | p. wood,         |
| q. concrete,          | r. other solid polymers, | s. other hard surfaces, | and              |
| t. building products. |                          |                         |                  |

27. The method as claimed in claim 22 wherein the alkoxysilane is trimethoxysilane.

28. The method as claimed in claim 3 wherein the material in (II) is an alkoxy functional silane.

29. The method as claimed in claim 28 wherein the silane is an aminoorganofunctional silane.

30. The method as claimed in claim 29 wherein the aminoorganofunctional silane has the general formula:



wherein  $n$  has a value of 1, 2, or 3;  $x$  has a value of 1 to 20; R is an alkyl group having 1 to 6 carbon atoms; each  $R^2$  is hydrogen or an alkyl group selected from the group consisting of 1 to 6 carbon atoms, X is a halogen, each  $R^3$  is hydrogen or an alkyl group selected from the group consisting of 1 to twenty carbon atoms and  $b$  has a value of 0, 1, 2, or 3.

31. The method as claimed in claim 30 wherein R is a methyl radical,  $n$  has a value of 3,  $x$  has a value of 3, each  $R^2$  is a methyl group.



32. The method as claimed in claim 3 wherein the solid substrate is selected from the group consisting of:

- |                       |                          |                         |                  |
|-----------------------|--------------------------|-------------------------|------------------|
| a. cotton,            | b. polyester,            | c. nylon,               | d. rayon,        |
| e. rubber,            | f. fibers,               | g. acrylic,             | h. foams,        |
| i. polypropylene,     | j. polyethylene,         | k. mineral,             | l. polyurethane, |
| m. paper,             | n. glass,                | o. silica,              | p. wood,         |
| q. concrete,          | r. other solid polymers, | s. other hard surfaces, | and              |
| t. building products. |                          |                         |                  |

33. The method as claimed in claim 28 wherein the alkoxysilane is trimethoxysilane.

34. The method as claimed in claim 1 wherein the material in (II) is an oligomer siloxane.

35. The method as claimed in claim 1 wherein the material in (II) is a polymeric siloxane.

36. The method as claimed in claim 1 wherein the material in (II) is a disilane.

37. The method as claimed in claim 1 wherein the material in (II) contains an —  
Si(C)<sub>y</sub>Si— linkage.

38. The method as claimed in claim 37 wherein y has a value of from  
1 to 12.

39. The method as claimed in claim 1 wherein the material in (II) is a silicone/organic copolymer.

40. A solid substrate when treated by the method of claim 1.

41. The method as claimed in claim 2 wherein the material in (II) is an oligomer siloxane.

42. The method as claimed in claim 2 wherein the material in (II) is a polymeric siloxane.

43. The method as claimed in claim 2 wherein the material in (II) is a disilane.

44. The method as claimed in claim 2 wherein the material in (II) contains an —  
Si(C)<sub>y</sub>Si— linkage.

45. The method as claimed in claim 44 wherein y has a value of from 1 to 12.

46. The method as claimed in claim 2 wherein the material in (II) is a silicone/organic copolymer.

47. A solid substrate when treated by the method of claim 2.
48. The method as claimed in claim 3 wherein the material in (II) is an oligomeric siloxane.
49. The method as claimed in claim 3 wherein the material in (II) is a polymeric siloxane.
50. The method as claimed in claim 3 wherein the material in (II) is a disilane.
51. The method as claimed in claim 3 wherein the material in (II) contains an — $\text{Si}(\text{C})_y\text{Si}$ — linkage.
52. The method as claimed in claim 51 wherein y has a value of from 1 to 12.
53. The method as claimed in claim 3 wherein the material in (II) is a silicone/organic copolymer.
54. A solid substrate when treated by the method of claim 3.

**(C )(1)(ix) EVIDENCE APPENDIX**

(not applicable)

**(C )(1)(x) RELATED PROCEEDINGS APPENDIX**

(not applicable)



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For USSN 10/640,367 in the name of John A. Reeve, entitled: SILICON-CONTAINING TREATMENTS FOR SOLID SUBSTRATES, appeal brief consisting of 3 pgs., 6 pgs. claims appendix, authorization to charge deposit account 13-2492 the sum of \$250.00 for the fee, return receipt postcard.

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